

BULLETIN

DU

DÉPARTEMENT DE L'AGRICULTURE

AUX

INDES NÉERLANDAISES.

N°. XVIII.

BUITENZORG,
IMPRIMERIE DU DÉPARTEMENT
1908.



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NEW OR INTERESTING MALAYAN FERNS.

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(July, 1908).

In the collections of non-determined malayan ferns of the Buitenzorg Herbarium I found several forms not considered in different papers on ferns of the Malay Archipelago, and some few specimens erroneously labeled with the names of described forms. Probably most of them are new.

CYATHEA, *Smith.*

Cyathea cyclodonta, v. A. v. R.; *Alsophila cyclodonta*, Christ, in Ann. Bot., XX, 137.

Indusium very distinct, at length a shallow, deeply and irregularly lobed, membranaceous, persistent, brown cup.

Borneo (Nieuwenhuis No. 1105).

Cyathea runensis, v. A. v. R.

Frondes amplæ, 3-pinnatifidæ, coriaceæ, glabræ, rachide inermi, supra setacea, pinnis \pm 55 c.m. longis et 22—25 c.m. latis, pinnulis sessilibus, acuminatis, ad basin 2—2 $\frac{1}{2}$ cm. latis, pinnatifidis, laciniis oblongis, subfalcatis, subobtusis, crenatis, margine leviter recurvatis, venis \pm 8 utrinque, inferioribus furcatis, soris in venis medialibus, numerosis, indusiis in fragmenta irregulariter rumpentibus.

Pulu Run (Teysmann).

Cyathea celebica, v. A. v. R.

Frondes amplæ, 3-pinnatæ, subcoriaceæ glabræ vel subtus vix minute paleaceæ, rachide aculeata, furfuracea, aculeis acutis. Pinnæ 50—60 c.m. longæ, \pm 20 c.m. latæ, petiolatæ, pinnulis sessilibus, infimis petiolatis, \pm 2 c.m. latis, segmentis sessilibus, subfalcatis, obtusis, crenatis, segmentis infimis longissimus, breviter petiolatis, deorsum lobatis, lobis parvis, infimis liberis, soris numerosis, segmenta apice et basi exceptis complentibus, indusiis tenuibus, demum sensim evanescentibus, venis furcatis, superioribus simplicibus, infimis 2—3 \times furcatis, soros carentibus.

Celebes (Teysmann, No. 13681).

HEMITELIA, R. Brown.

Hemitelia (Amphicosmia) **sumatrana, v. A. v. R.**

Frondes 3-pinnatifidæ, subtripinnatæ, chartaceæ, supra ad costas piloso-tomentosæ, subtus ad costas costulasque dense paleaceæ, paleis ferrugineis, rachide muricata, verrucis brevibus, acutis, apice nigris. Pinnæ \pm 55 c.m. longæ, petiolatæ, pinnulis 8—12 c.m. longis, \pm 2 c.m. latis, lineari-oblongis, brevi-acuminatis, profunde pinnatifidis, basi pinnatis, segmentis lineari-oblongis, subacutis, crenato-dentatis, venis 1—2 \times furcatis, soris 1—4 utrinque, subcostularibus, indusiis brunneis.

Sumatra (Teysmann, N°. 2436).

ALSOPHILA, R. Brown.

Alsophila saparuensis, v. A. v. R.

Frondes amplæ, 3-pinnatifidæ, firmæ, haud rigidæ, stipite indumento fibrilloso, flavido aut brunneo, deciduo vestito, aculeis asperato, rachide inferne aspera, superne fibrillosa. Pinnæ centrales maximæ, lanceolatæ, acuminatæ, \pm 45 c.m. longæ, 12—16 c. m. latæ, pinnulis sessilibus, infimis recte patentibus, centralibus maximis, \pm 1 $\frac{1}{2}$ c.m. latis, segmentis confertis, obtusis, apice crenatis vel dentatis, soris in venis \pm medialibus, indusiis spuriis, infernis, planis, minutis, orbicularibus.

Saparua (Teymann), *Buru*.

CIBOTIUM, Kaulfuss.

Cibotium barometz (*Baranetz*), **J. Sm.**, Journ. of Bot., I, 437; Christ, Philipp. Journ. Sci., II, C, 117.

Christ recognizes four distinct forms of *Cibotium*, which probably may be regarded as varieties, and from an examination of the material of the Buitenzorg Herbarium I distinguish still two forms more:

Var. setosum: Like var. *sumatranum* (*C. sumatranum*, Christ, l.c., 118), but the rachis, costæ and costulæ densely clothed with pale-brown or yellowish bristles spreading in various directions and leaving the rachis subasperous when they fall. Sori 1 or rarely 2 on each side, occupying the base of the segments, remote from the costæ; indusium fulvous. — *Locality not mentioned, but very probably malayan.*

Var. lampongense: Like var. *Cumingii* (*C. Cumingii*, Kze, Christ, l.c., 118), but the ultimate segments falcate, bluntly crenato-serrate. Costæ and costulæ copiously (not densely), but deciduously furfuraceous, the tomentum loose, pale-brown, intermixed with long, firm, straight or crisped, bristle-like, dark-brown hairs. Sori rather close to the costæ, less oblique; indusium brown, not pruinose. — *Sumatra* (Teysmann).

GLEICHENIA, Smith.

Gleichenia (*Mertensia*) **amboinensis, v. A. v. R.**

Frondes \pm 50—100 c.m. longæ, apice dichotomæ, cæterum pinnatæ, rachide indumento deciduo, tomentoso vel furfuraceo vestita, pinnis 2—3-jugis, erecto-patentibus, superioribus dichotomis, infimis pinnatis, apice dichotomis, pinnulis dichotomis, furcis omnibus foliaceis, profunde pinnatifidis, laciniis lineari-oblongis, apice obtusis, crenatis, subcoriaceis, subtus plerumque glaucis, costa tomento deciduo tecta, 1—2 c.m. longis, \pm 2 m.m. latis, laciniis infimis plerumque reductis, suborbicularibus, ramulis ultimis acuminatis, apice grosse dentatis.

Amboyna (Teysmann; Boerlage, N°. 488), *Buru* (Binnendijk, N°. 153).

HYMENOPHYLLUM, *Smith.*

Hymenophyllum Kurzii, *Prantl.* Morph. d. Gefässer., I, Hymenoph., 54.

If this plant is the same as lately found by the Ladies von Grävenitz and Stein the description will be:

Stipes distant, more than \pm 1 c.m. apart, sparingly hairy, 1—2 c.m. long, narrowly winged (rather marginate) towards the frond. Fronds lanceolate-oblong to subdeltoid-ovate, 4—5 c.m. long, $1\frac{1}{2}$ — $2\frac{1}{2}$ c.m. broad; main rachis narrowly winged, the wing entire, not toothed. Pinnæ cut down to a winged, not toothed rachis into linear, simple or forked segments, which are blunt at the apex, toothed at the margin. Texture thin, hyaline; under surface covered with scattered, spine-like hairs on the costæ. Sori terminal on the main and higher secondary rachises and some anterior segments of the higher pinnulæ; indusium oblong, the base conical, covered with spine-like hairs on the under side, the valves subacute, slightly toothed at the apex; receptacle linear, slightly exserted.

Java (Ladies von Grävenitz and Stein).

TRICHOMANES, *Linné.*

Trichomanes (Cephalomanes) **sumatranum, v. *A.***
v. *R.*

T. javanico et asplenioides affine. Pinnæ margine acroscopico lobatæ, apice dentatæ, lobis apice dentatis, inferioribus (1—3) \pm elongatis et auriculiformibus, lobis inferioribus pinnarum inferiorum liberis et plerumque petiolatis; pinnæ superiores apicem frondis versus sensim reductæ, summæ valde contractæ, petioli-formes, anguste marginatæ. Sori apices pinnarum superiorum occupantes, in pinnis reductis solitarii, in pinnis cæteris 1 vel plures, indusio marginato, limbo erecto, truncato, leviter concavo, alis in dentes laterales minutos excurrentibus.

Sumatra (Burck).

LYGODIUM, Swartz.

Lygodium (Eulygodium) **Teysmannii. v. A. v. R.**

Rachis frondis pallide brunnea, gracilis, cum petiolo leviter pilosa et anguste marginata. Petioli primarii breves, secundarii 2—3 c.m. longi. Segmenta primaria furcata. Pinnæ furcatæ, subpinnatæ. Pinnulæ 2, petiolatæ, haud articulatae; inferior patens, 1—2 \times furcata; superior 2 \times furcata, petiolo tertiaro cum secundario fere continuo. Segmenta ultima (quaternaria) sterilia subcoriacea, glabra vel costis leviter pilosis, lanceolata, 8—12 c.m. longa, 1—1½ c.m. lata, libera vel bina connexa, apicem versus angustata, apice acuta, margine serrata, basi subcordata vel truncata, interdum semicuneata, inarticulata, costis basi non vel leviter nodulosis; segmenta fertilia sterilibus similia, non vel vix contracta, spicis soriferis contiguis, 1—4 m.m. longis. Sporæ incertæ, probabiliter reticulatæ.

Pulu Pisang (Teysmann, Nos 1597 & 2304).

Lygodium circinatum, Sw., Syn. Fil., 153.

Var. monstuosum: Ultimate segments dichotomously forked near the apex.— *Hort. Bog.*

Var. cristatum: Like var. denticulatum (Prantl, Mon. d. Gefässer., II, Schiz., 64), but the spores provided with 6 joining crests among the verrucæ, and the ultimate segments smaller and narrower than in the type, \pm ½—1 c.m. broad.— *Sumatra* (Burck).

DENNSTÆDTIA, Bernhardt.

Dennstædtia javanica, Christ, in Bull. Herb. Boiss., 2^e Série, IV, 617; *Dicksonia javanica, Bl.,* Enum., 240.

Specimens of this species gathered by Dr. Raciborski have the indusia similar to those of the other *Dennstædtiæ*; the sporangia are provided with a long, vertical annulus with the extremities separated by an orbicular group of slightly thickened cells placed in a whorl, with the stalk of the sporangium attached in the centre of the whorl.— *Java.*

Dennstædtia sumatrana, v. A. v. R.

Frondes amplæ, 3-pinnatæ, rachide crassa, glabra, brunnea. Pinnæ erecto-patentes, 85 c.m. vel plus longæ, basi \pm 15 c.m. latæ. Pinnulæ lineari-lanceolatæ, acuminatæ, basi \pm 2 c.m. latæ, apice pinnatifidæ, rachide (tertiaria) anguste alata. Segmenta tertiaria coriacea, glabra, oblonga, obtuse rotundata, patentia, \pm 5 m.m. lata, pinnatifida, basi acroscopica truncata, leviter auriculata, basi basiscopica cuneata et decurrentia, lobis confertis, obtusiusculis vel rotundatis, venis submanifestis. Sori marginales, in angulis sinuum solitarii, indusiis distincte cupuliformibus.

Sumatra (Beccari, N°. 436). — The description is taken from a doublet in the Buitenzorg Herbarium, received from Beccari. This plant was determined by Baker (Journ. of Bot., XVIII, 210) as a variety of *Davallia* (*Microlepia*) *Speluncae*, Bk.

CYCLOPELTIS, J. Smith.

Cyclopeltis Presliana, Berck., Introd. Crypt. Bot., 517; *Lastræa Presliana*, J. Sm., Journ. of Bot., III, 412.

Var. biauriculata: Like the type, but the pinnae with a conspicuous, deltoid, \pm deflexed auricle at the base on the upper side, which has the apex obliquely truncate. — *New Guinea* (Peckel).

DRYOPTERIS, Adanson.

Dryopteris (Lastræa) Teuscheri, v. A. v. R.

Rhizoma paleaceum, paleis lineari-lanceolatis, acuminatis, ciliatis vestitum. Stipites subfasciculati, \pm 5—10 c.m. longi, cum rachide incani vel pallide fusci, dense brevi-pilosi. Frondes subcoriaceæ, subtus dense glandulosæ et brevi-pilosæ, lineari-lanceolatæ, \pm 15—20 c.m. longæ, \pm 3—4 c.m. latæ, pinnatæ, apicem versus pinnatifidæ, apice elongatæ, crenatæ. Pinnæ subobliquæ, oblongæ, superiores breviores, integræ, sessiles, medianæ subsessiles vel brevi-petiolulatæ, confertæ, falcatæ, \pm 1 c.m. latæ, lobatæ, apice oblongo, integro vel crenato, basi profunde pinnatifidæ, truncatæ, latere anteriore auriculatæ; pinnæ inferiores breviores, deflexæ; lobi

integri, obtusi, costulis furcatis vel pinnatis, venis liberis. Sori inter costulas et marginem mediales, in lobis 2-seriales, indusiis reniformibus, dense pilosis.

Borneo (Teuscher).

Dryopteris* (Lastræa) *Peekeli*, v. *A. v. R.

Stipites \pm 10 c.m. longi, glabri vel leviter glanduloso-pilosi. Frondes lanceolatae vel ovatae, \pm 30—40 c.m. longae, 15—20 c.m. latae, herbaceae vel membranaceae, rachide cum faciebus brevipilosa, pinna terminali profunde pinnatifida. Pinnae \pm 18—22 utrinque, patentes, lineari-lanceolatae, acuminatae; pinnae medianae 1—1 $\frac{1}{2}$ c.m. latae, sessiles vel brevi-petiolatae, profunde pinnatifidae, lobis lineari-oblongis, erecto-patentibus vel patentibus, integris, obtusiusculis, 1 $\frac{1}{2}$ —2 m.m. latis, infimis non vel vix brevioribus; pinnae infimae breviores sed non reductae, deflexae, lobis integris, infimis liberis, infimis anterioribus latioribus, profunde dentatis vel pinnatifidis; costulae in lobis omnibus pinnatae, venis liberis, 8—10-jugis, simplicibus. Sori submarginales, numerosi vel ad basin lorum solitarii, indusiis reniformibus, villosis.

New Guinea (Peekel, No. 44).

Dryopteris* (Lastræa) *diversifolia*, v. *A. v. R.

Rhizoma erectum vel adscendens. Stipites fasciculati vel approximati, 3—6 c.m. longi, pallide fusci, pilis brevibus, albidis, squarrosis copiose pubescentes, basi paleacei, paleis fuscis, subulatis, ciliatis. Frondes triangulares vel ovato-lanceolatae, \pm 6—12 c.m. longae, \pm 4—9 c.m. latae, apicem versus pinnatifidae, herbaceae, rachide et costis venisque pilosae, faciebus minutissime pubescentes; frondium triangulare pinnae infimae et frondium lanceolarum pinnae medianae longissimae, frondium lanceolarum pinnae infimae breviores, deflexae. Pinnae confertae vel imbricatae, patentissimae, lineari-oblongae, 7—12 m.m. latae, pinnatifidae, apice integrae, obtusae, basi profunde pinnatifidae vel pinnatae. Segmenta secundaria (lobi vel pinnulae) oblonga, conferta vel leviter imbricata, obtusa, integra, infima plerumque remota, costulis centralibus pinnatis, venis lateralibus liberis, simplicibus. Sori minuti, partem liberam segmentorum tantum occupantes, margini subapproximati, indusiis reniformibus, minute pubescentibus, margine glandulosis vel supra glandulosis et pulveraceis, glandulis cum pulvere flavidis.

Batu Islands (Raap, No. 27).

Dryopteris (Lastraea) **Backeri, v. A. v. R.**

Stipites cum rachidibus primariis secundariisque pallide brunnei, supra pilis gracilibus, albidis, haud valde brevibus, pallidis tecti, ceterum paleis squarrosis, deciduis, lineari-subulatis, angustis, pallide brunneis, graciliter et decidue ciliatis copiose vestiti, demum palearum basibus persistentibus asperuli. Frondes *D. setigerae* similes, sed segmentis primariis secundariisque laxioribus, tertiariis in sicco firmiter herbaceis, pinnatifidis, supra fere glabris sed ad costas pubescentibus, subtus ad costas paleaceis et ad venas pilosis, lobis triangulari-oblongis, parvis, costulis in lobis pinnatis, venis simplicibus, liberis. Sori numerosi, parvi, costis segmentorum tertiariorum approximati, in quoque lobo 1—2, indusiis minutissimis, membranaceis, albidis, inter sporangia mox absconditis.

Krakatau. — Mr. C. A. Backer discovered this plant in the as new vegetation of said small volcanic island, which was totally destroyed by an eruption in 1883. — I describe this a new species with some hesitation seeing it is not probable (however not impossible) that a new species should be found in a new vegetation. It may be a hybrid between *D. setigera*, *O. Ktze* and *multiseta*, *C. Chr.* or even *Phegopteris ornata*, *Fée*. It differs: *a*, from *D. setigera* in having the stipe and rachises copiously provided with deciduous linear-subulate scales leaving the stipe and rachises rough when they fall; *b*, from *D. multiseta* in having a line of hairs on the upper side of the stipe and rachises and the scales deciduous, flat, not castaneous; *c*, from *Phegopteris ornata* in having the fronds much smaller, with the rachises not winged and the sori minutely indusiate.

MESOCHLÆNA, R. Brown.

Mesochlæna larutensis, v. A. v. R.; *Nephrodium larutense*, *Bedd.*, Handb. Ind. Ferns, Suppl., 73.

Var. borneensis: Upper surface of the pinnæ naked except on the costa; under surface copiously and minutely short-hairy; indusium covered with minute, yellow, globose glands.

Borneo (Hallier, No. 2704)

ASPIDIUM. Swartz.

Aspidium (Tectaria) **ternatense, v. A. v. R.**

Stipites 30—45 c.m. longi, glabri, firmi. Frondes fertiles \pm 45 c.m. longæ. Pinna terminalis membranacea, glabra, lanceolata, \pm 10—15 c.m. longa, \pm 2 c.m. lata, utrinque angustata, margine integra vel sinuata, apice acuta vel acuminata; pinnæ laterales terminali simillimæ, summæ sessiles, decurrentes, liberæ vel terminali connexæ, pinnæ inferiores petiolatæ, pinnæ infimæ basi furcatæ, costis subprominentibus, costulis (main veins) erecto-patentibus, areolis subquadrangularibus, inter costulas 2-serialibus, venulis liberis extrorsim excurrentibus in areolis solitariis. Sori numerosi, utroque latere 5—7-seriales, inter costulas 2-seriales, leviter immersi, in areolis solitarii, in venulis liberis terminalibus, indusiis peltatis, orbicularibus, persistentibus. — Frondes steriles non vidi.

Ternate Island (Teysmann). If Copeland's conception of the priority of the generic name should be right, this species should be called *Tectaria ternatensis, v. A. v. R.*

Aspidium (Sagenia) **subcaudatum, v. A. v. R.**

Rhizoma erectum vel suberectum, paleis lineari-lanceolatis, subacuminatis, atrofuscis vestitum. Stipites fasciculati, erecti, glabri vel basi paleacei, apicem versus alati, 6—12 c.m. longi. Frondes papyraceæ, glabræ, simplices, trifidæ vel trifoliatæ; frondes simplices lanceolatæ, 15—25 c.m. longæ, infra medium 4—5 c.m. latæ, basi in alam stipitis decurrentes, margine integræ vel repandæ, apice longe acuminatæ, subcaudatæ; segmenta frondium trifidarum et trifoliatarum frondibus simplicibus simillima, sed frondium trifoliatarum stipites non alati; costæ et costulæ prominentes, costulæ marginem haud attingentes, incurvatæ; areolæ venulas liberas includentes. Sori pauci, sparsi, interdum confluentes, indusiis reniformibus, fugacibus.

Borneo (Teuscher).— If Copeland's conception of the priority of the generic name should be right, this plant should be called *Tectaria subcaudata, v. A. v. R.*

CYSTOPTERIS. Bernhardt.

Cystopteris tristis, Mett., in Ann. Mus. Bot. L. B., I,

241; *Alsophila tristis*, Bl., Moore, Ind., 58; *Aspidium triste*, Bl., Enum., 169.

The specimens of this species gathered by Raciborski and determined as *Davallia tristis*, Rac. (Flor. Btz., I, 131) have the sori with a fugacious, ligulate indusium, and the sporangia with an incomplete, vertical annulus.

SCHIZOLOMA, Gaudichaud.

Schizoloma (Euschizoloma) **coriaceum, v. A. v. R.**

Rhizoma repens, paleis minutis, brunneis, fibrillosis, supapressis vestitum. Stipites remotiusculi, glabri, nitidi, atrobrunnei vel purpurei, \pm 8—15 c.m. vel plus longi. Frondes firmæ, subcoriaceæ, glabræ, simplices, furcatæ vel pinnatæ; frondes simplices lineari-lanceolatæ, 10—20 c.m. longæ, 5—15 m.m. latæ, apicem et basin versus angustatæ, margine recurvatæ, costis undulatis, subtus prominentibus, costulis (main veins) nullis, venis immersis, anastomosantibus; segmenta frondium furcatarum vel pinnatarum frondibus simplicibus similia; segmenta frondium pinnatarum \pm 1—3 utrinque. Sori longi, continui, indusiis firmis, coriaceis, illis frondium Euvittariæ subsimilibus.

Borneo (Hallier, No. 1934).— The description is taken from a specimen determined as *Tænitis blechnoides*, Sw. (Ann. Btz., XX, 128).

ADIANTUM, Linné.

Adiantum (Eu-adiantum) **aculeolatum, v. A. v. R.**

Rhizoma breve, repens, paleis angustis, fuscis, subulatis dense vestitum. Stipites approximati, \pm 30—40 c.m. longi, purpureo-brunnei vel atrii, nitidi, deorsum paleis sparsis, crispatis, brunneis, patentibus, deciduis vestiti, basi demum asperuli, supra pilis minutis dense pubescentes, rachide infra glabra, supra minute hirsuto-tomentosa. Frondes \pm 20—35 c.m. longæ, 15—30 latæ, acuminatæ, 3-pinnatæ, pinnulis ultimis glabris, coriaceis, dimidiatis, \pm 2 c.m. longis, \pm 1 c.m. latis, obtusis, secus rachidem subtruncatis, margine acroscopico apicique leviter lobatis, denticulatis, venulis usque ad apicem dentium excurrentibus, soris in

quaque pinnula ± 4 , in lobis solitariis, transverse oblongis vel subobreniformibus, sinu late rotundato vel semiorbiculari, capsulis ad et inter venulas orsis.

Amboyna. — The description is taken from specimens gathered by Teysmann and cultivated in the Buitenzorg gardens. Perhaps this plant may be identical with Copeland's *A. mindanaense* (Philipp. Journ. Sci., I, Suppl., 154, tab. X).

Adiantum (Eu-adiantum) **suborbiculare. v. A. v. R.**

Rhizoma breve, paleis lineari-subulatis, integris, late fuscis dense vestitum. Stipites approximati, basi paleacei, ad 20 c.m. longi, cum rachidibus nigricantes, glabri, nitidi. Frondes $\pm 15-20$ c.m. longæ. Pinnæ pinnatæ, infimæ 2-pinnatæ, pinnulis ultimis firmis, papyraceis, subpellucidis; glabris, ± 1 c.m. longis, ad $1\frac{1}{2}$ c.m. latis, oblique flabellatis vel suborbicularibus, petiolatis, basi cuneatis, truncatis vel rotundatis, plerumque irregulariter et leviter lobatis, soris in quaque pinnula 2—6, rotundatis vel transverse oblongis, sinu lato, haud profundo, capsulis ad venulas orsis.

Sumatra (Burck). — The ultimate leaflets are more or less deciduous, but not articulate.

PELLÆA, Link.

Pellæa (Pteridella) **timorensis, v. A. v. R.**

Rhizoma breve, paleis longis, lineari-subulatis, eroso-denticulatis, brunneis vestitum. Stipites approximati, 12—20 c. m. longi, nigricantes, nitidi, supra fibrilloso-tomentosi, ad basin paleis deciduis tecti. Frondes lanceolato-oblongæ, 15—25 c.m. longæ, 8—12 c.m. latæ, pinnatæ, rachide nigricanti, supra tomentosa, pinnis $\pm 10-15$ utrinque, coriaceis, glabris, subpatentibus, 1— $1\frac{1}{2}$ c.m. latis, lanceolatis, subacutis, sterilibus crenatis, fertilibus integris, subacutis, basi articulatis, rotundatis vel leviter cordatis, petiolulis nigricantibus, supra tomentosis, costis conspicuis, deorsum nigris, soris marginalibus, linearibus, Pteridi similibus, indusiis angustis.

Timor (Forbes, No. 3918). — Very near *P. Doniana*, *Hk.* (Spec. Fil., II, 137, tab. CXXV, A) from tropical Africa.

PTERIS, Linné.

Pteris (Eupteris) orientalis, v. A. v. R.

Stipites cum rachidibus rubri vel purpurei, villosi, demum glabri. Frondes \pm 40—55 c.m. longæ, \pm 30 c.m. latæ. Pinnæ coriaceo-membranaceæ, pellucidæ, \pm 20—30 utrinque, integræ, lineares, confertæ vel imbricatæ, sessiles, pinnæ infimæ plerumque maximæ, 15—25 c.m. longæ, subulatæ, basi 1—2 c.m. latæ, rotundatæ, margine integræ vel serratæ, apice obtusiusculæ, costis subtus prominentibus, venis liberis, numerosis, gracilibus, subpatentissimis, supra et subtus decidue villosis, soris longis, indusiis angustis. — Planta Blechno orientali simillima.

Banda Islands (Treub).

Pteris rangiferina. Pr. Miq. in Ann. Mus. Bot. L. B., IV, 95; *Pt. Dalhousiæ, Rac.* (not *Hk.*), Flor. Btz., I, 153.

Raciborski's description of this plant does not agree with Hooker's diagnose and drawing in Spec. Fil., II, 170, tab. CXXI, A. — *Pt. rangiferina, Pr.* and *Dalhousiæ, Hk.*, are 2 quite different plants, the latter has the fertile fronds with the lower pinnæ pinnatifid on the posterior side into long, upcurved segments and the former with the lower pinnæ pinnatifid on the anterior side into short, straight segments.

Java.

Pteris (Eupteris) Treubii, v. A. v. R.

Stipites \pm 20 c.m. longi, cum rachide brunnei, glabri. Frondes 30—45 c.m. longæ, pinnatæ. Pinna terminalis linearis, 20—30 c.m. longa, \pm 5 m.m. lata, basin versus sensim angustata, margine integra, apice acuminata, spinuloso-denticulata; pinnæ laterales 3—4 utrinque, erecto-patentes, superiores pinnæ terminali simillimæ, infimæ petiolatæ, furcatæ vel 3-partitæ, segmentis \pm æquilongis, subpetiolatis, papyraceæ, glabræ, venis liberis, subremotis, obscuris, patentibus. Sori valde longi, apicem pinnarum pinnularumque haud attingentes. — Frondes steriles non vidi.

Wahay (Ceram). — The name is given to this species in honour of its discoverer Prof. Dr. M. Treub, Director of the Agricultural Department in Netherlands India.

BLECHNUM. *Linné.*

Blechnum (Eublechnum) **Treubii. v. A. v. R., Hort.**
Bog.

Planta parva, cæspitosa. Rhizoma breve, erectum vel suberectum, valde stoloniferum. Stipites fasciculati, deorsum paleis sparsis vestiti, tenues, 2—5 c.m. longi. Frondes simplices, subcoriaceæ, glabræ, 4—9 c.m. longæ, 8—12 m.m. latæ, lanceolatæ, acuminatæ, apice obtusiusculæ, basin versus angustatæ, basi plerumque minute 1—2-auriculatæ, venis subremotis, interdum basi leviter anastomosantibus, simplicibus vel 2—3-furcatis, apice incrassatis, marginem haud attingentibus. Sori longi, continui vel interrupti, costales, apicem et basim frondis haud attingentes. Blechno lanceola, *Sw.* simile sed rhizomate haud repente, stipitibus non seriatis, frondibus minoribus.

Java (Mount Salak).— The description is taken from specimens cultivated in the Buitenzorg gardens. The species bears the name of Prof. Dr. M. Treub.

ASPLENIUM, *Linné.*

Asplenium (Neottopteris) **batuense, v. A. v. R.**

Rhizoma crassum, lignosum, repens, epaleaceum. Stipites breves, remoti, ad 1 c. m. longi. Frondes simplices, papyraceæ vel coriaceæ, lanceolatæ, 40—75 c.m. longæ, 4—10 c.m. latæ, acutæ vel breviter acuminatæ, apice plerumque proliferæ, margine integræ, basin versus sensim angustatæ, basi obtusiusculæ, costa subtus prominente, quadrangulari, angustissime bialata, venis conspicuis, liberis, gracilibus, erecto-patentibus, simplicibus vel furcatis. Sori numerosi, tota facie inferiore apice et basi aliiformii exceptis occupantes, costam et marginem non attingentes, venis sterilibus 1—6 separati, indusiis angustis, subcoriaceis, demum conspicue recurvatis.

Batu Islands (Raap, No. 674).

Asplenium glochidiatum. Rac., in Bull. Ac. Crac., 1902, 62.

This species is very near and probably quite identical with

A. scolopendrioides *J. Sm.* (Journ. of Bot., III, 408; Hk. Bk., Syn. Fil., 192; Hk., Icon. Pl., X, tab. CMXXX). Hooker's drawing shows a frond, which is slightly but distinctly crenulate towards the apex, and the plant cultivated in the Buitenzorg gardens (Dr. Nieuwenhuis' original specimen) has the sori with the *indusium* leaving a distinct, elevated ridge on the frond when it dehisces.
Borneo.

Asplenium* (Eu-asplenium) *Schoggersii*, v. *A. v. R.

Stipites fasciculati, \pm 4 c.m. longi, atrofusci, cum rachide paleis gracilibus, deciduis vestiti. Frondes ovato-lanceolatae, 8—10 c.m. longae, pinnis \pm 15 utrinque, patentissimis, coriaceis, subtus paleis minutissimis, deciduis, fimbriatis parce munitis, pinnis infimis brevioribus, mediis \pm 2 c.m. longis, \pm $\frac{1}{2}$ c.m. latis, apice acutis vel obtusiusculis, dentatis, basi oblique truncato-cuneatis, margine ceterum lobatis, lobis truncatis vel rotundatis, subcrenatis, obliquis, venis paucis, liberis, obliquis, simplicibus vel furcatis. Sori minusculi, costis approximati et subparalleli, basi venarum occupantes.

Java (Preanger Regencies, Lieut. Col. J. C. F. Schoggers).

Asplenium* (Eu-asplenium) *Hagenii*, v. *A. v. R.

Rhizoma cum basi stipitum paleis erecto-patentibus, lineari-lanceolatis, acuminatis, caducis, basi dilatatis, margine graciliter brevi-dentatis, apice capillaribus, obscure brunneis vestitum. Stipites \pm 12 c.m. longi, erecti, firmi, obscure brunnei, cum rachide paleis similibus, pallide brunneis, crispatis obtecti. Frondes \pm 15 c.m. vel plus longae, lanceolato-oblongae, acuminatae; pinnae coriaceae, subtus paleaceae, subrhomboidales, erecto-patentes vel subhorizontales, infimae plerumque maximae, 4—6 c.m. longae, $1\frac{1}{2}$ —2 c.m. latae, obtusae vel acuminatae, petiolatae, lateribus inaequalibus, profunde pinnatifidae aut basi pinnatae; segmenta secundaria 3—4 utrinque, oblonga vel cuneata, erecto-patentia, apice denticulata, infima flabellato-cuneata, inconspicue venosa, venis liberis, extus trifida, denticulata, paleis iis rachidis similibus sed gracilioribus. Sori lineares, superiores costae subparalleli, inferiores marginibus lateralibus laciniarum subparalleli.

Sumatra (Hagen).

PHEGOPTERIS, Fée.

Phegopteris (Euphegopteris) **Smithii, v. A. v. R.**

Stipites cum rachide glabri, straminei. Frondes 30—45 c.m. longæ, 6—8 c.m. latæ, lanceolatae, acuminatae, apice pinnatifidæ, supra ad costas pilosæ, subtus ad costas, costulas et venas longe pilosæ. Pinnæ \pm 30 utrinque, subcoriaceæ, patentissimæ, superiores sessiles, basi adnatæ, medianæ subsessiles, basi late cuneatæ, margine fere ad costam pinnatifidæ, inferiores sensim reductæ, infimæ auriculiformes; lacinia oblongæ, obtusæ, infimæ maximæ, ad 5 m.m. longæ, 1 m.m. latæ, integræ vel leviter crenatæ, costulis pinnatis, venis liberis, simplicibus. Sori rotundi, remoti, in apice venarum positi, submarginales, marginibus recurvatis segmentorum absconditi, indusiis nullis.

Java (Leg? N°. 4710). — This species bears the name of Mr. J. J. Smith, Assistant Curator of the Buitenzorg Herbarium. — After Christensen's natural system the plant should be called *Dryopteris Smithii, v. A. v. R.*

Phegopteris (Goniopteris) **ceramica, v. A. v. R.**

Stipites cum rachide glabri, fusci. Frondes deltoideo-oblongæ, \pm 75 c.m. longæ, deorsum \pm 50 c.m. latæ, membranaceo-herbaceæ, glabræ vel ad costas inconspicue villosæ. Pinna terminalis \pm 15 c.m. longa, basi \pm 1 $\frac{1}{2}$ c.m. lata, apicem versus sensim angustata, apice integra, caudata, cæterum ad $\frac{3}{4}$ partem pinnatifida, laciniis oblongis, obtusis, subintegris, subfalcatis; pinnæ superiores et medianæ terminali simillimæ, sessiles, basi latissimæ; pinnæ inferiores ad medium latissimæ, basin versus angustiores, subpetiolatæ, inferiorum laciniis infimis ad petiolos decurrentibus; costulæ in laciniis pinnatæ, venulis \pm 12 utrinque, infimis anastomosantibus. Sori in venis mediales, conferti, parvi, numerosi, venas superiores haud occupantes, indusiis nullis.

Ceram (Treub). — After Christensen's natural system this species should be called *Dryopteris ceramica, v. A. v. R.*

DICTYOPTERIS, *Presl.*

Dictyopteris labrusca. v. A. v. R.; *Polypodium Labrusca*, *Hk.*, Spec. Fil., V, 73, tab. CCLXXXV, B; *Aspidium Labrusca* *Christ*, in Ann. Btz., XV, 137.

In the specimens gathered in Borneo by Dr. Nieuwenhuis and determined by Dr. Christ as *Sagenia Labrusca* (Ann. Btz., XX, 108) I could not find any trace of an indusium.

Var. ternata: Raciborski's plants gathered in Nusa Kembangan (Java) have the fronds not 3-lobate (Flor. Btz., I, 109), but decidedly 3-foliate, with the central segment hastato-3-fid with a broad, sinuate, subcaudate central lobe and 2 narrow, \pm entire, acute lateral lobes; the lateral segments are free or joined with the central one, upcurved, \pm entire, unequal-sided, acuminate, the base cuneate on the anterior, cordate on the lower side. — *Java*.

Dictyopteris (Arcypteris) **pentaphylla. v. A. v. R.**

Stipites \pm 30 c.m. longi, cum rachide brunnei vel atropurpurei, minute fibrillosi et decidue paleacei, paleis paucis, brunneis vel purpureis. Frondes 30—45 c.m. longæ, 15—25 c.m. latæ, subcoriaceæ, pellucidæ, glabræ, costis costulisque prominentibus, venis distinctis, areolis numerosis, venas liberas includentibus. Pinna terminalis 15—20 c.m. longa, simplex, late ovata, acuminata, rotundato- vel acuto-undulata, basi late cuneata vel rotundata, plerumque 1—2-lobata, lobis erecto-patentibus, lanceolatis, obtuse rotundatis vel acuminatis; pinnæ laterales erecto-patentes, 2 utrinque, remotæ, lato-lanceolatæ, parte basiscopica producta, apice acuminatæ, margine integræ vel undulatæ, basi late cuneatæ ad rotundatæ, pinnæ infimæ basi furcatæ, lobo basiscopico obtuso vel acuminato. Sori numerosi, irregulariter sparsi, plerumque confluentes, indusiis nullis.

New Guinea (Treub). — After Christensen's natural system this plant should be called *Aspidium pentaphyllum*, and after Copeland's conception *Tectaria pentaphylla*, v. A. v. R.

ANTROPHYUM. *Haulfuss.*

Antrophyum ovatum. v. A. v. R.

Rhizoma breve, paleis lineari-subulatis vel lanceolatis, integris vel brevi-denticulatis, brunneis vel atris vestitum. Stipites approximati, erecti, firmi, 2—4 c.m. longi. Frondes late ovato-spathulatæ, coriaceæ, glabræ, 8—10 c.m. longæ, ad vel supra medium 4—6 c.m. latæ, apicem et basin versus abrupte angustatæ, apice brevi-acuminatæ, basi anguste cuneatæ, longe decurrentes, margine integræ et subpellucidæ, costa basin versus haud deficiente. Sori pauci, leviter immersi, non valde longi, margini subapproximati, irregulariter subflabellati; capsulae paraphysibus linearibus, spirilibus intermixtæ.

Sumatra (Forbes, N°. 2923^a).

Antrophyum costatum. v. A. v. R.

Rhizoma breve, paleis fuscis, lineari-lanceolatis, acuminatis, subdenticulatis vestitum. Frondes confertæ, sessiles, spathulatæ, coriaceæ, glabræ, 10—25 c.m. longæ, apicem versus 3—5 c.m. latæ, apice obtusæ, basin versus sensim et regulariter angustatæ, margine fere rectæ, integræ, costa in parte superiore frondis solum deficiente. Sori breves vel longi, plerumque liberi, leviter immersi, marginibus fovearum leviter productis; sporangia paraphysibus capitato-clavatis, petiolatis intermixta.

Borneo (Hallier, N°. 3340). — This plant was determined as *Antrophyum callaefolium* Bl. (Ann. Bot., XX, 130) from which it differs by the nearly straight edges, the long costa and the capitato-clavate paraphyses.

Antrophyum spathulatum. v. A. v. R.

Rhizoma repens, paleis lineari-lanceolatis, fuscis, margine acute et subremote brevi-dentatis vestitum. Frondes spathulatæ, coriaceæ, glabræ, 45—55 c.m. longæ, inter medium et apicem \pm 15 c.m. latæ, obovatae, apice brevi-acuminatae, margine integræ et \pm pellucidæ, basin versus sensim angustatae, basi anguste cuneatae, in stipitem brevem decurrentes, costa in dimidio inferiore frondium haud deficiente, nigra, haud prominente. Sori longi, valde numerosi, plerumque reticulati, distincte immersi, sporangiis paraphysibus linearibus intermixtis.

Lingga Islands (Teysmann, N°. 16636).

SYNGRAMMA. *J. Smith.*

Syngamma cartilagens. *Diels.* in Engl. & Prantl, Nat. Pfl-fam., I⁴, 257; *Gymnogramme cartilagens*, *Bk.*, Hk. Bk., Syn. Fil. (1868), 386; Cesati, Fel. di Bor., tab. II, fig. 3—3a; *Acrostichum borneense*, *Burck*, Ann. Btz., IV (1884), 99; *Elaphoglossum borneense*, *C. Chr.*, Ind. Fil., 303.

The plants gathered in Borneo by Dr. Nieuwenhuis and determined by Christ as *Gymnogramme cartilagens*, *Bk.*, (Ann. Btz., XX, 131) and those collected by Mr. Teuscher, described by Dr. Burck as *Acrostichum borneense* are identical; the only difference is that the former were all young (however soriferous) plants and the latter both young and adult.

Rhizome short-creeping, densely clothed with small, black or dark-brown hairs or fibres towards the apex. Stipes approximate, $\frac{1}{2}$ —4 c.m. long, (the fertile fronds on the longest stipes in the fully developed plants), deciduously fibrillose at the base. Fronds decidedly dimorphous in the adult plants, but less so in the younger ones, the barren ones \pm 10—50 c.m. long, \pm 2—3 c.m. broad, lanceolate or linear-lanceolate, narrowed gradually from the middle towards both ends, the apex acuminate, the edge cartilagineous, decoloured, densely fringed with small, cartilagineous, short-oblong, bluntish or blunt, spreading or erecto-patent teeth or serratures in the younger or smaller forms, but sharply serrato-denticulate throughout or towards the base only in the largest or adult forms, which are not rarely subentire towards the apex. Texture coriaceous; surfaces naked; costa prominent beneath, more or less distinctly canaliculate towards the base on the upper side in the larger and sometimes also in the smaller forms; veins close, fine, simple or forked, connected by the cartilagineous edge or by fine, transversal veinlets near the margin. Fertile fronds longer and narrower than the barren ones, not rarely subsimilar to the latter in the smaller forms, \pm 15—60 c.m. long, $\frac{1}{2}$ — $1\frac{1}{2}$ c.m. broad, linear-lanceolate or linear, narrowed very gradually towards both ends in the larger forms. Sori occupying the upper $\frac{1}{2}$ — $\frac{9}{10}$ part of the fertile fronds, linear, running along the veins, reaching from the costa to where the veins join, at length often confluent; paraphyses

present, minute, clavate or capitate, long-stalked, only visible by $\pm 100 \times$ magnifying power.

Borneo.

Syngamma (Dityogramme) **Boerlageana. v. A. v. R.**

Stipites fasciculati, glabri, firmi, 15—25 c.m. longi. Frondes triangulares, herbaceae, glabrae, pinnatae, 10—15 c.m. longae, 6—12 c.m. latae. Pinnae 3—5 utrinque; pinna terminalis simplex, lanceolata vel plerumque hastata, basi late cuneata, lobis patentibus, triangularibus, obtusis; pinnae laterales horizontaliter patentibus, infimae maximae, inaequilatae, basi acroscopica late cuneatae, truncatae vel cordatae, basi basiscopica anguste cuneatae, apicem versus angustatae, obtusae, margine leviter et irregulariter undulatae, costulis deficientibus, venis reticulatis, areolis Acrosticho subsimilibus. Sori lineares, recti, curvati vel flexuosi, obliqui, soris minoribus, oblongis vel rotundatis intermixtis, sporangiis paraphysibus dense intermixtis.

Amboyana (Boerlage).

VITTARIA. J. Smith.

Vittaria (Euvittaria) **Bensei. v. A. v. R.**

Rhizoma breve, repens, paleis tenuibus, atrobrunneis, a basi ad apicem sensim angustatis, graciliter acuminatis, serrulatis dense vestitum. Frondes sessiles, coriaceae, glabrae, ± 10 c.m. longae, furcatae. Segmenta linearia, falcata (apicem versus leviter decurvata), acuta vel obtusa, 2—3 m.m. lata, simplicia vel furcata, costis indistinctis, venis immersis. Sori longi, marginales, continui, valvis foveolarum aequalibus.

Java (*Preanger Regencies*, Capt. H. L. Bense).

POLYPODIUM, Linné.

Polypodium sumatranum, Bk., Journ. of Bot., XVIII (1880), 214; *P. subpleiosorum, Rac.,* Flor. Btz., I (1898), 89.

The doublets received from Beccari (N^o. 448) gathered in Sumatra and the plants collected in Java by Raciborski are quite

identical. Raciborski's opinion to have found a new species was caused by Baker's incorrect diagnose. Raciborski's description is correct.

Java, Sumatra.

Polypodium (Eupolypodium) **subdichotomum, Rac.,**
MS. in Herb. Bog.

Tota planta pilis longis, squarrosis, rubrofuscis vestita. Rhizoma breve, paleis membranaceis, ferrugineis, subsubulatis, integris dense vestitum. Stipites fasciculati vel approximati, breves. Frondes coriaceae, 10—15 c.m. longae, basi sensim angustatae; frondes adultae 2-furcatae, laciniis simplicibus vel iterum furcatis. Segmenta linearia, 2—3 m.m. lata, apice sensim angustata, venis occultis, liberis, brevibus, furcatis. Sori utroque latere costarum 1-seriales, subcostales, rotundati, magni, alternantes, demum fere confluentes et superficiem inferam segmentorum fere totam occupantes.

Sumatra (Forbes, Nos. 2408 & 2497).

Polypodium (Eupolypodium) **subtriangulare, v. A.**
v. R.

Frondes subfasciculatae, coriaceae, subsessiles, lineares, basin et apicem versus angustatae, $7\frac{1}{2}$ —15 c.m. longae, \pm 5 m.m. latae, pinnatae, rachide subtus parce pilosa, pilis deciduis, rubescentibus. Pinnae oblongae, $1-1\frac{1}{2}$ m.m. latae, obliquae, obtusae, integrae, basi dilatatae, contiguae, crassae, subtus planae, supra convexae, marginibus pinnarum sterilium leviter recurvatis, venis liberis, occultis, in pinnis probabiliter solitariis. Sori in pinnis fertilibus solitarii, oblongi, immersi, pinnarum dimidiam superiorem occupantes, initio foveolarum marginibus lateralibus recurvatissimis absconditi.

Amboyna (Boerlage).

Polypodium (Eupolypodium) **serrato-dentatum, v.**
A. v. R.

Rhizoma breve, repens, paleis lineari-subulatis, pallide fuscis. Stipites approximati, 1—2 c.m. longi, pilis brevibus, squarrosis vestiti. Frondes rigide coriaceae, glabrae, rachide nigra, pilosa, lineari-lanceolatae, 10—15 c.m. longae, 8—12 m.m. latae, pinnatae; basin et apicem versus angustatae. Pinnae triangulares, erecto-

patentes, basi leviter confluentes, 3—4 m.m. latae, margine valde recurvatae, acute serrato-dentatae, apice acutae, dentibus obliquis \pm 4 utrinque, venis immersis, liberis, basi furcatis, ramulis anterioribus brevissimis. Sori juveniles oblongi, parvi, apices venularum brevissimarum occupantes.

? *Java* (Forbes, No. 244).

Polypodium (Eupolypodium) **lancifolium. v. A. v. R.**

P. subminuto simile sed pilis brevibus, albidis vel pallide rubescentibus; frondibus 6—10 c.m. longis; pinnis interdum fere horizontaliter patentibus; soris numerosis, confertis, paginam inferiorem frondis omnino occupantibus.

Sumatra (Hagen).

Polypodium (Eupolypodium) **Schefferi. v. A. v. R.**

Rhizoma breve, paleis lanceolatis, atrobrunneis, integris vestitum. Stipites subfasciculati, $1\frac{1}{2}$ —5 c.m. longi, pilis brevibus, glanduliformibus, squarrosis, erecto-patentibus vel appressis tecti. Frondes lineares, firmiter herbaceae, in sicco fragiles, pellucidae, pinnatae, basin et apicem versus angustatae, 5—10 c.m. longae, 5—10 m.m. latae, rachide faciebusque papillois, papillis minutis, clavatis, pellucidis, flavidofuscis, subappressis. Pinnae parvae, erecto-patentes; pinnae latissimae irregulariter oblongo-rhomboidales, angustissimae oblongo-ovales, superiores subconfluentes, subintegrae vel crenatae, medianae decurrentes, remotae, crenatae, crenato-dentatae vel crenato-lobatae, inferiores valde reductae, angustae, integrae, remotae, costis pinnarum pinnatis, venis liberis, simplicibus, 1—3 utrinque. Sori rotundati, in venis solitarii, costales, demum interdum confluentes.

Java (Scheffer).

Polypodium (Goniophlebium) **Koningsbergeri, v. A. v. R.**

P. verrucoso affine. Rhizoma paleis indistincte ciliato-dentatis, fere integris vestitum. Stipites remoti, tenues, \pm 10—15 c.m. longi, cum rachide mox glabrescentes. Frondes subcoriaceae, adultae glabrae, parvae, \pm 15—20 c.m. longae, \pm 12—15 c.m. latae. Pinnae paucijugae (\pm 2 utrinque); pinna terminalis \pm 10—12 $\frac{1}{2}$

c.m. longa; pinnae laterales terminali simillimae, sessiles, oppositae vel suboppositae, articulatae, erecto-patentes, 7—8 c.m. longae, basi late cuneatae, $\pm 1\frac{1}{2}$ c.m. latae, margine indistincte crenatae vel crenato-serratae, a basi apicem versus sensim angustatae, apice acuminatae, costis subtus paleis minutis, irregulariter fimbriatis parce munitis, areolis utrinque 3-serialibus. Sori in areolis costalibus solitarii, vix vel leviter immersi, foveolis supra haud valde prominentibus; sporangia paraphysibus flavidis, apice leviter incisis intermixta.

Java, (*Preanger Regencies*, v. A. v. R.).— The name is given in honour of Dr. J. C. Koningsberger, Subdirector of the Agricultural Department in Netherlands India.

Polypodium (Pleopeltis) **antrophyoides. v. A. v. R.**

Rhizoma breve, repens, squamis fuscis, lineari-lanceolatis, integris vel leviter dentatis vestitum. Frondes simplices, coriaceae, glabrae, sessiles vel brevi-stipitatae, 8—15 c.m. longae, in parte superiore late lanceolatae, 3—5 c.m. latae, apice brevi-acuminatae, margine integrae, recurvatae, basin versus sensim angustatae, basi lineari-cuneatae, costa prominente, apicem versus sensim tenuiore demum deliquescente, costulis (main veins) nullis, venis immersis, areolis irregularibus, numerosis, venulas liberas includentibus. Sori sparsi, majusculi, superficiales.

Sumatra (Forbes, N^o. 3119).

Polypodium (Pleopeltis) **Beccarii. v. A. v. R.**

Rhizoma repens, firmum, paleis lanceolato-oblongis, apice acutis, basi rotundatis vel acutis vestitum. Stipites remoti, 1—5 c.m. longi, erecti, glabri. Frondes simplices; steriles coriaceae, glabrae, ± 6 —10 c.m. longae, 7—8 m.m. latae, lineari-lanceolatae, apicem et basin versus sensim angustatae, apice \pm obtusae, margine indistincte crenatae, costa subtus prominente, costulis (main veins) nullis, venis occultis, areolis ± 1 —2-seriatis, venas liberas includentibus; frondes fertiles longius stipitatae, 12—15 c.m. longae, 5—7 m.m. latae, apicem et basin versus sensim angustatae. Sori in utroque latere costae 1-seriati, mediales vel ad costam approximantes, partem superiorem frondis occupantes, receptaculo \pm oblongo.

Sumatra (Beccari, N°. 449). — The description is taken from a doublet received from Beccari. The plant was determined by Baker as *P. congener*, *Hk.* (*Journ. of Bot.*, XVIII, 213).

Polypodium* (Pleopeltis) *Forbesii*, v. *A. v. R.

Rhizoma longe repens, firmum, paleis ovatis vel oblongis, utrinque rotundatis vel acutis, peltatis, brunneis, centro nigricanti, valde appressis dense vestitum. Stipites remoti, $1\frac{1}{2}$ — $2\frac{1}{2}$ c.m. longi, erecti, firmi, glabri, crassiusculi. Frondes simplices, coriaceae, glabrae, late lanceolatae, 10—12 c.m. longae, infra medium $2\frac{1}{2}$ —4 c.m. latae, utrinque sensim angustatae, acutae, venis gracilibus, irregulariter anastomosantibus, costulis (main veins) nullis, areolis venas liberas includentibus. Sori majusculi, remoti, utrinque 2-seriales, seriebus exterioribus medialibus, apicem et basin frondium haud occupantes.

Sumatra (Forbes, N°. 2333).

Polypodium* (Pleopeltis) *Raapii*, v. *A. v. R.

Rhizoma repens, squamis lineari-lanceolatis, deciduis vestitum. Stipites remoti, 1—5 c.m. longi, glabri. Frondes simplices, tenuiter herbaceae vel membranaceae, glabrae, lanceolatae, 10—12 c.m. longae, $\frac{3}{4}$ — $1\frac{1}{2}$ c.m. latae, (fertiles angustiores), utrinque sensim angustatae, apice obtusae vel acuminatae, costa distincta, costulis (main veins) nullis, venis distinctis, areolis utrinque 1—3-serialibus, venas liberas includentibus. Sori remoti, rotundati vel oblique oblongi, 1-seriales, margine approximati, soris aliis paucis (1—5) irregulariter intermixtis. — Plantae aquatiles, probabiliter submersae.

Batu Islands (Raap, N°. 671). — Another submerged water-fern lately found in *Lombok Island* by Dr. Ernst has the stalks shorter, the fronds a little broader and slightly scaly on the costa beneath, and the sori placed in 1—2 rows nearer the midrib than the edge, whether or not accompanied by some few others placed in a 3rd, outer row.

Polypodium* (Pleopeltis) *Valetonianum*, v. *A. v. R.

Rhizoma repens, crassum, viride, paleis tenuiter membranaceis, flavidis, lanceolatis, acuminatis, erectis, leviter sed distincte crispatis, basi peltato-rotundatis vestitum, demum glabrum. Stipites remoti, glabri, firmi, erecti, rubicundo- vel brunneo-virides, 5—15 c.m. longi,

frondium fertilium longiores. Frondes dimorphae; frondes steriles valde coriaceae, glabrae, simplices, ovato-oblongae vel sublanceolatae, \pm 9—11 c.m. longae, infra medium \pm 4—5 c.m. latae, apicem versus angustatae, apice obtusae vel obtusiusculae, margine leviter incrassatae, leviter crenatae, crenis rectis vel late subrotundatis, basi rotundatae vel cuneatae, leviter decurrentes, costa prominente, costulis (main veins) distinctis, erecto-patentibus, marginem haud attingentibus, areolis immersis, absconditis, venas liberas includentibus; frondes fertiles lineares, \pm 15 c.m. longae, infra medium \pm 1 c.m. latae, basi abrupte cuneatae, apicem versus sensim angustatae, costulis (infinis exceptis) patentissimis. Sori magni, profunde immersi, utrinque 1-seriales, inter costulas solitarii, mediales, summi \pm rotundati, caeteri basin frondis versus sensim elongati, costae perfecte paralleli, infimi lineari-oblongi, \pm $\frac{1}{2}$ c.m. longi, \pm 1— $1\frac{1}{2}$ m.m. lati.

Java (*Preanger Regencies*, v. A. v. R.). — The species bears the name of Dr. Th. Valeton, Director of the Buitenzorg Herbarium.

Polypodium (Pleopeltis) **paucijugum. v. A. v. R.**

Rhizoma repens, tenue, paleis lanceolatis vestitum. Stipites tenues, erecti, paleacei, alati, infra partem alatam 4—10 c.m. longi. Frondes tenues sed firmae, subtus minutissime pilosae, 10—20 c.m. longae, profunde pinnatifidae, lobo terminali integro, 5—10 c.m. longo, $\frac{1}{2}$ — $1\frac{1}{2}$ c.m. lato, lobis lateralibus similibus, 2—4 utrinque, erecto-patentibus vel suberectis, apicem versus sensim angustatis, apice acutis vel obtusiusculis, basi ala angusta connexis, infimis in alam stipitis sensim decurrentibus, costulis (central ribs of the lobes) venisque primariis subtus prominentibus, areolis primariis 1-serialibus, areolis secundariis in et extra areolas primarias indistinctis, venas liberas paucas includentibus. Sori in areolis primariis 1—2, parvi, suboblongi.

Borneo (Teuscher).

PLATYCERIUM, Desv.

Platycerium Wilhelminae Reginae, v. A. v. R.

Frondes steriles 2 vel plus, usque ad 100 c.M. altae et latae, erectae, convexae, parte superiore profunde lobatae, laciniis latis, linearibus, simplicibus vel 1—2 \times furcatis, parte exteriori sinuato-

lobatae, lobis in lacinias lineares superiores sensim transientibus. Frondes fertiles 2, flaccido-coriaceae, pilis stellatis copiose vestitae, furcatae; laciniae primariae contiguae pendulae, \pm 200 c.m. longae, dichotomae, laciniis ultimis lanceolatis vel elongato-triangularibus, caeteris cuneatis, soro 1, magno, sinum infimum occupante; laciniae primariae oppositae horizontales, simplices, late cuneato-flabellatae, usque ad 75 c.m. latae, margine exteriori leviter rotundatae, utrinque in cornu exeuntes, cornibus oblongis, magnis, falcato-incurvatis, soro 1, maximo, usque ad 45 c.m. lato, inter cornua posito.

Hort. Bog. (? Malesia). — The description of this splendid and interesting fern is taken from a specimen probably gathered in one of the malayan islands and since many years cultivated in the Buitenzorg gardens. — I give this as a new species with some hesitation the diagnose of one of the australian species (*P. Veitchii*, *C. Chr.*) being unknown to me. — If Underwood's conception of the priority of the generic name should be right this species should be called *Alcicornium Wilhelminae Reginae*, v. *A. v. R.* It is dedicated to Her Majesty WILHELMINA, Queen of The Netherlands. — Raciborski referred this plant to *P. grande*, *J. Sm.*

Platycerium coronarium. *Desc.*, Prod., 213; *P. biforme*, *Bl.*, Flor. Jav., Fil. (1828), 44, tab. XVIII; *Osmunda coronaria*, *König* (1785).

Var. cucullatum: Ultimate segments of fertile fronds dilated towards the obliquely rotundato-truncate and slightly emarginate apex. Soriferous segment longitudinally oblong, subcucullate, slightly slipper-shaped (the edge broadly recurved).

Lingga Islands (Teysmann).

ELAPHOGLOSSUM, *Schott.*

Elaphoglossum (Eu-elaphoglossum) **microphyllum**, v. *A. v. R.*

Rhizoma tenue, repens, nigricans, paleis lineari-lanceolatis, fuscis, integris vestitum. Stipites remoti, tenues, $1-2\frac{1}{2}$ c.m. longi. Frondes herbaceae, firmae, glabrae; frondes steriles in-

tegrae, lanceolatae, 5—6 c.m. longae, $1\frac{1}{2}$ c.m. latae, brevi-acuminatae, apice obtusiusculae, basi sensim angustatae, venis liberis, simplicibus vel furcatis, marginem haud attingentibus; frondes fertiles breviores, angustiores, basi abrupte angustatae et in alam brevem stipitis decurrentes, stipite 7—8 c.m. longo.

Java (Ploem).

STENOCHLÆNA, J. Smith.

? Stenochlæna (Lomariopsis) dubia, v. A. v. R.

Rhizoma scandens, lignosum, crassum, atrofusum, dense paleaceum, demum glabrescens et asperum. Stipites remoti, ± 35 c.m. longi, atropurpureo-brunnei, cum rachide supra dense atrobrunneo-tomentosi, glandulis 2-serialibus, oblongo-ellipticis, plano-depressis muniti, paleis lineari-subulatis, deciduis vestiti, demum asperi. Frondes steriles 2-pinnatae, rachidibus atrobrunneo-purpureis. Pinnae erecto-patentes, ad rachidem haud articulatae. Pinnulae coriaceae, glabrae, patentissimae, articulatae, ovato-oblongae, acuminatae, ± 5 c.m. longae, prope basin $\pm 1\frac{1}{2}$ c.m. latae, basi rotundatae vel late cuneatae, leviter inaequilatae, leviter crenatae, apicem versus crenato-serratae, costa utrinque prominente, supra basin versus tomentosa, venis liberis, superioribus simplicibus vel furcatis, inferioribus $2 \times$ furcatis vel pinnatifidis, omnibus basi venula costali connexis. — Frondes fertiles non vidi.

Amboyna (Teysmann). — The description is taken from a specimen determined by Christ as *Lomariopsis sorbifolia*, Fée.

LEPTOCHILUS, Kaulfuss.

Leptochilus (Pœcilopteris) trifidus, v. A. v. R.

Rhizoma repens. Stipites approximati, ± 10 —20 c.m. longi, frondium fertilium longiores, paleis lanceolato-subulatis, brevibus, crispatis, fuscis vestitum, demum glabrescentes. Frondes steriles herbaceae, glabrae, simplices vel plerumque profunde 3-fidae, lobis lateralibus terminali similibus sed brevioribus; frondes simplices ± 25 c.m. longae, ± 7 c.m. latae, lanceolatae, apice abrupte acuminatae, margine irregulariter undulatae, basi abrupte angus-

tatae et breve decurrentes; frondes 3-fidae lobo mediano frondibus simplicibus simili sed non decurrente, lobis lateralibus patentibus, basi breviter decurrentibus, costis subtus \pm paleaceis, costulis (main veins) manifestis, areolis primariis utrinque 6—7-serialibus, areolas minores et venulas liberas includentibus. Frondes fertiles sterilibus similes sed multo minores.

Hort. Bog., (? *Malesia*). — The description is taken from specimens cultivated in the Buitenzorg gardens and probably gathered in one of the malayan islands. — Near *L. Harlandii*, *C. Chr.* (*Gymnopteris decurrens*, *Hk.*, Fil. Exot., tab. XCIV).

Leptochilus (Chrysodium) **Raapii. v. A. v. R.**

Rhizoma erectum, paleis erectis, lineari-lanceolatis, obscure fuscis, margine pallide fuscis dense vestitum. Stipites dense fasciculati, 15—30 c.m. longi, glabri, firmi, erecti, sulcati, frondium fertilium longiores. Frondes dimorphae, flaccido-coriaceae, glabrae; frondes steriles simplices, interdum ternatae; segmenta frondium ternatarum frondibus simplicibus similia sed minora; frondes simplices ovato-lanceolatae, elongatae, integrae, 12—20 c.m. longae, 3—4 c.m. latae, basi \pm rotundatae vel late cuneatae, apicem versus sensim angustatae, apice brevi-acuminatae, costulis (main veins) nullis, venis reticulatis, areolis iis Acrostichi similibus; frondes fertiles ternatae, segmentis brevi-petiolatis, linearibus, \pm 4—6 c.m. longis, \pm 5 m.m. latis, acutis.

Batu Islands (Raap). — Simple fronds with the appearance of the pinnae of *Acrostichum aureum*, *L.*, but smaller.

Tab. I.

Dictyopteris labrusca. v. A. v. B., var. ternata. taken from a specimen gathered in Nusa Kembangan by Dr. Raciborski.

a. Rhizome with fronds, $\frac{1}{3}$ X.

b. Portion of fertile fronds, $1\frac{1}{2}$ X.



a. $\frac{1}{3}$

b. $\frac{3}{2}$

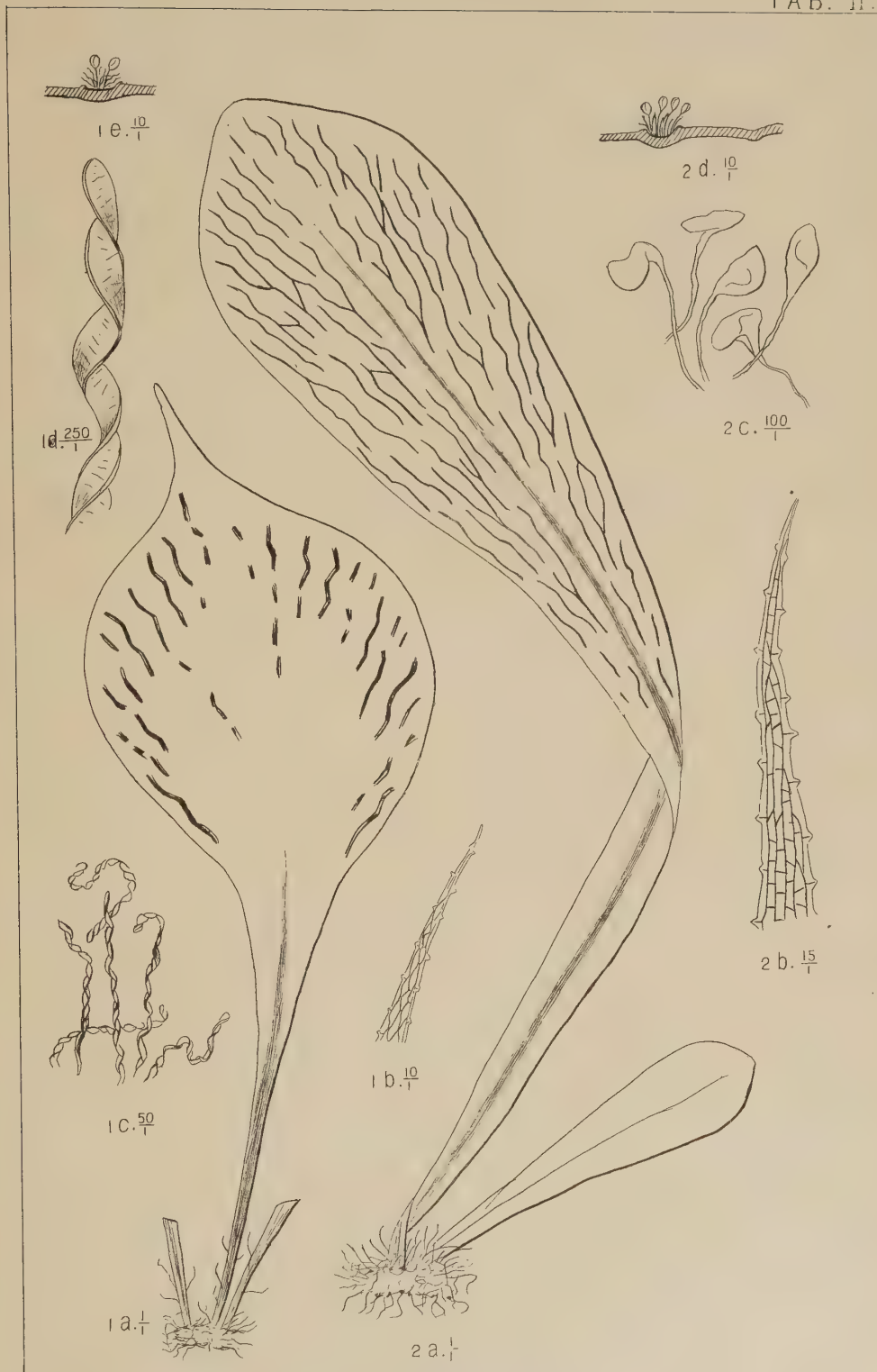
Tab. II.

Fig. 1. **Antrophyum ovatum, v. A. v. R.** taken from Mr. Forbe's plant.

- a.* Fertile frond, 1 ×.
- b.* Rhizome scale, 10 ×.
- c—d.* Paraphyses, 50—250 ×.
- e.* Sorus (transversal section), 10 ×.

Fig. 2. **Antrophyum costatum, v. A. v. R.**, taken from Dr. Hallier's plant.

- a.* Fertile frond, 1 ×.
- b.* Rhizome scale, 15 ×.
- c.* Paraphyses, 100 ×.
- d.* Sorus (transversal section), 10 ×.



Tab. III.

Syngamma Boerlageana. v. A. v. R., taken from
a specimen gathered by Dr. Boerlage.

- fig. 1. Rhizome with a barren and a fertile frond, $\frac{1}{2} \times$.
- fig. 2. Barren pinna with venation, $1 \times$.
- fig. 3. Fertile pinna with sori, $1 \times$.
- fig. 4. Capsule with paraphyses, $40 \times$.



Tab. IV.

fig. 1. **Polypodium Raapii, v. A. v. R.**, taken from Mr. Raap's original plant.

- a. Rhizome with fronds, 1 ×.
- b. Portion of fertile frond, 3 ×.

fig. 2. The plant gathered in Lombok by Dr. Ernst.

- a. Rhizome with fronds, 1 ×.
- b. Portion of fertile frond*, 2 — 3 ×.

(*) *The primary areolæ a little too narrow, the distance between each pair of primary veins should be larger.*



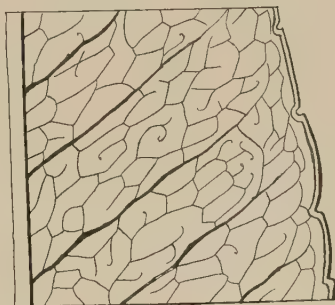
Tab. V

Polypodium Valetonianum, v. *A. v. R.*

- a.* Rhizome with fronds, $\frac{2}{3} \times$.
- b.* Rhizome scale, 20 \times
- c.* Portion of barren frond, 2 \times .
- d.* Apex of fertile frond, seen from below, 2 \times .
- e.* Base of " " seen from above, 2 \times .
- f.* Transversal section of fertile frond, 4—5 \times .



b. $\frac{20}{1}$



c. $\frac{2}{1}$



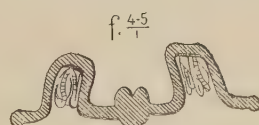
d. $\frac{2}{1}$



e. $\frac{2}{1}$



a. $\frac{2}{3}$



f. $\frac{4.5}{1}$

Tab. VI & VII.

Platycerium Wilhelminæ Reginae, v. A. v. B.,

taken from the specimen cultivated in the Buitenzorg gardens.

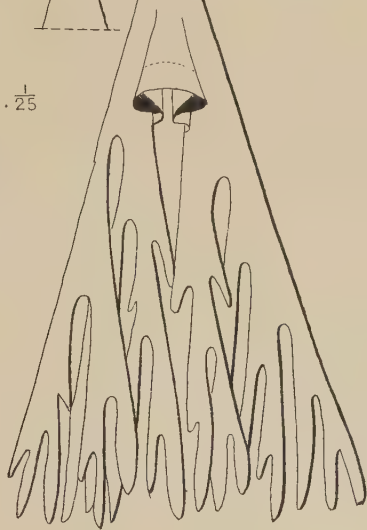
- a.* Natural aspect of a part of the plant, $\frac{1}{10}$ X.
- b.* Plan of the fronds, $\frac{1}{25}$ X.
- c.* Lower part of fertile fronds showing the sori, $\frac{1}{15}$ X.
- d.* Ultimate segments of fertile fronds, $\frac{1}{6}$ X.



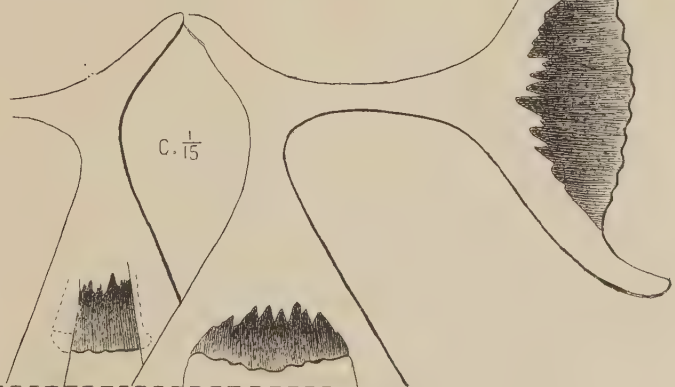
a $\frac{1}{10}$



b. $\frac{1}{25}$



d. $\frac{1}{6}$



c. $\frac{1}{15}$

Tab. VIII.

Leptochilus Raapii, v. A. v. R., taken from Mr.
Raap's original plant.

- a.* Whole plant with barren and fertile fronds, $\frac{1}{2}$ X.
- b.* Portion of barren frond, showing the venation, 2 X.
- c.* Rhizome scale, 8 X.

